

		Our ref: HGY/2022/4319 Contact: Gareth Prosser Date: 22/05/2023
Town and Country Act 1990 (As amended)		
Location:	Edmansons Close, Bruce Grove, London, N17 6XD	
Proposal:	Full planning application for the demolition of existing laundry building and 1970s infill building; alterations and extensions to 44 existing almshouses to create 8 x 1 bed, 12 x 2 bed and 6 x 3 bed units; alterations to existing Gatehouse to provide 1 x 2 bed unit; construction of 1 x new build 3 bed almshouse to replace 1970s infill building; construction of a new apartment building comprising 7 x studio units and 9 x 1 bed units; construction of 4 x new build 2 bed units within two new pavilions (2 units in each pavilion, 4 units in total); with landscaping; improvements to access; car parking; and ancillary development thereto.	

Carbon Management Response 22/05/2023

In preparing this consultation response, we have reviewed:

- Energy Statement prepared by Hodkinson (dated 8 September 2022)
- Dynamic Overheating Report prepared by Hodkinson (dated 24 August 2022)
- Sustainability Statement prepared by Hodkinson (dated 9 September 2022)
- Relevant supporting documents.

1. Summary

The development achieves a reduction of 31.47% carbon dioxide emissions on site, which is below the minimum requirement and therefore cannot be supported. The applicant should explore more options to improve the fabric energy efficiency of the refurbished building and improve on-site reduction under Be Green scenario, balancing heritage considerations with the climate emergency in line with London Plan Policy SI2, of the development. In addition, the overheating strategy needs to be modelled with the correct weather file.

Some further clarifications must be provided on the energy strategy, overheating assessment (detailed below) which need to be resolved before this application can be supported. Appropriate planning conditions will be recommended once this information has been provided.

2. Energy Strategy

Policy SP4 of the Local Plan Strategic Policies, requires all new development to be zero carbon (i.e. a 100% improvement beyond Part L 2013). The London Plan (2021) further confirms this in Policy SI2.

The overall predicted reduction in CO₂ emissions for the development shows an improvement of approximately 31.47% in carbon emissions with SAP10.2 carbon factors, from the Baseline development model (which is Part L 2013 compliant). This represents an annual saving of approximately 38.9 tonnes of CO₂ from a baseline of 157.9 tCO₂/year.

London Plan Policy SI2 requires major development proposals to calculate and minimise unregulated carbon emissions, not covered by Building Regulations. The calculated unregulated emission for the new build is 5.9 tCO₂.

<i>Site-wide (SAP10.2 emission factors)</i>			
	Total regulated emissions (Tonnes CO₂ / year)	CO₂ savings (Tonnes CO₂ / year)	Percentage savings (%)
Part L 2013 baseline	157.9		
Be Lean	119	38.9	24.63%

Be Clean	119	0	0%
Be Green	108.2	10.8	6.83%
Cumulative savings		49.7	31.47%
Carbon shortfall to offset (tCO ₂)	108.2		
Carbon offset contribution	£95 x 30 years x 108.2tCO ₂ /year = £ 308,370		
10% management fee	£30,837		
Total	£339,207		

<i>Residential New Build (SAP10.2)</i>			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2013 baseline	21.4		
Be Lean	16.9	4.5	21%
Be Clean	16.9	0.0	0%
Be Green	6.1	10.8	50%
Cumulative savings		15.3	71%
Carbon shortfall to offset (tCO ₂)	6.1		

<i>Residential Refurbished Building (SAP10.2 emission factors)</i>			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2013 baseline	136.5		
Be Lean	102.1	34.4	25.2%
Be Clean	102.1	0	0%
Be Green	102.1	0	0%
Cumulative savings		34.4	25.2%
Carbon shortfall to offset (tCO ₂)	102.1		

Actions:

- The Energy Strategy should include the site-wide carbon dioxide emissions and savings, and should report on the calculated unregulated emissions for the refurbished building.
- The current site-wide reduction of 31% falls below the minimum on-site carbon reduction requirement of 35% which is not acceptable.
- Please submit the GLA's Carbon Emission Reporting Spreadsheet.

Energy Use Intensity / Space Heating Demand

Applications are required to report on the total Energy Use Intensity and Space Heating Demand, in line with the GLA Energy Assessment Guidance (June 2022). The Energy Strategy should follow the reporting template set out in Table 5 of the guidance, including what methodology has been used.

EUI is a measure of the total energy consumed annually but should exclude on-site renewable energy generation and energy use from electric vehicle charging.

Building type	EUI (kWh/m ² /year)	Space Heating Demand (kWh/m ² /year)	Methodology used

Actions:

- What is the calculated Energy Use Intensity (excluding renewable energy)? How does this perform against GLA benchmarks, i.e. at 35 kWh/m²/year? Please submit the information in line with the GLA's reporting template for both the new and retained buildings.
- What is the calculated space heating demand? How does this perform against the GLA benchmark of 15 kWh/m²/year? Please submit the information in line with the GLA's reporting template for both the new and retained buildings.

Energy – Lean

The applicant has proposed a saving of 38.9 tCO₂ in carbon emissions (24.63%) through improved energy efficiency standards in key elements of the build, based on SAP10.2 carbon factors. Whilst this goes beyond the minimum 10% reduction respectively set in London Plan Policy SI2, the overall carbon reduction for the refurbished element of the scheme does not go far enough.

The following u-values, g-values and air tightness are proposed:

	New Build	Refurbishment
Floor u-value	0.13 W/m ² K	0.50-0.70 W/m ² K
External wall u-value	0.18 W/m ² K	2.10 W/m ² K
Roof u-value	0.10 W/m ² K	0.11 W/m ² K
Door u-value	TBC	3.00 W/m ² K
Window u-value	0.90 W/m ² K	Rear elevation part to be 1.40 W/m ² K Existing single glazed windows to be added with secondary glazing providing 2.5 to 2.9 W/m ² K
G-value	0.40	0.85
Air permeability rate	3 m ³ /hm ² @ 50Pa	15 m ³ /hm ² @ 50Pa
Ventilation strategy	Mechanical ventilation with heat recovery (MVHR 90% efficiency; <0.58 W/l/s Specific Fan Power)	Natural ventilation with extract fans
Thermal bridging	Accredited Construction Details	
Low energy lighting	100%	Provided in all fittings where possible.
Heating system – Be Lean (efficiency / emitter)	Gas boiler with 89.5% efficiency	Gas Boiler with 89.5% efficiency
Thermal mass	Medium	Medium
Improvement from the target fabric energy efficiency (TFEE)	TBC	TBC

Actions:

New Build

- Please identify on a plan where the MVHR units will be located within the dwellings. The units should be less than 2m away from external walls. This detail can also be conditioned.
- What is the proportion of glazed area? Consider following the LETI Climate Emergency Design Guide principles in façade design.
- Provide the average % improvement on the FEES.

Refurbishments

- Provide an estimate of the existing performance in un-refurbished condition. Outline the source of this data or assumptions, such as a building condition survey, energy use, an Energy Performance Certificate (EPC). Please also state clearly what figures have been used for the modelling, i.e. current conditions with evidence or the Building Regulations Part L notional figures?
- The air permeability should be measured; the application should provide air tightness testing results and a strategy to improve air tightness. This will be conditioned. However, for current modelling, the notional air tightness figures of Part L should be used. This information was already requested at pre-application stage.

- It is recommended to explore more options to improve the energy efficiency of the existing building fabric with internal wall insulation, floor insulation for e.g.: using thin insulation with 'breathable' hygroscopic properties and double glazing – slim profile double glazing. The proposed approach to use secondary glazing will not provide enough improvement to the existing fabric from a climate emergency point of view as mentioned in the pre-app advice.
- If the air tightness of the refurbished build is improved, mechanical ventilation with heat recovery could be proposed to further reduce heat losses and address the condensation risk identified in the report.
- Provide the average % improvement on the FEES.
- More emphasis needs to be placed on reducing the energy demand from control systems, and outline where it would be possible and where not (and why), like lighting (aim for 100% low energy in all fittings), ventilation, equipment, and appliances.
- It is not clear whether advanced lighting/space conditioning control or smart metering is proposed for the listed building.

Overheating is dealt with in more detail below.

Energy – Clean

London Plan Policy SI3 calls for major development in Heat Network Priority Areas to have a communal low-temperature heating system, with the heat source selected from a hierarchy of options (with connecting to a local existing or planned heat network at the top). Policy DM22 of the Development Management Document supports proposals that contribute to the provision and use of Decentralised Energy Network (DEN) infrastructure. It requires developments incorporating site-wide communal energy systems to examine opportunities to extend these systems beyond the site boundary to supply energy to neighbouring existing and planned future developments. It requires developments to prioritise connection to existing or planned future DENs.

The development is seen to be 500 meters of a proposed DEN (Upper Lee Valley Heat Network). However, the applicant is not proposing site-wide communal energy system with reasons associated with costs, distance, and small size of the development.

Energy – Green

As part of the Be Green carbon reductions, all new developments must achieve a minimum reduction of 20% from on-site renewable energy generation to comply with Policy SP4.

The application has reviewed the installation of various renewable technologies. The report concludes that air source heat pumps (ASHPs) and solar photovoltaic (PV) panels are the most viable options to deliver the Be Green requirement for new build. A total of 10.8 tCO₂ (6.83%) reduction of emissions are proposed under Be Green measures.

Refurb

The applicant is not proposing ASHP for the refurbished build due to limited improvements on the fabric performance of the buildings and the visual impact on the character of the listed building in presence of ASHP's external unit. However, opportunities may exist to include solar PV on the rear of the properties, and with solar PV materials that integrate within the roof.

For refurbished build, installing solar photovoltaic panels and air source heat pumps may be appropriate where these are unobtrusively inserted on and around the historic building and avoid the front so to mitigate impact on the original facades and on the character and appearance of the Conservation Area, if any. Unobtrusive siting, modest proportions and a minimalist appearance are key to successful equipment integration with historic buildings and places.

During pre-app discussions the applicant noted that some gas boilers had recently been replaced but not all. No analysis has been submitted to demonstrate what the best replacement heating solution is, in terms of carbon emissions and its life cycle.

New build

The solar array peak output would be 5 kWp. The array of panels would be mounted on the roof positioned at an angle of 5-10° facing south-west. The individual air-to-water ASHP systems (min. SCOP of 3.00) will provide hot water and heating to the new build apartment and houses.

Actions:

- Provide details of the existing heating system (both electric and gas boiler) including efficiency, estimated lifecycle, planned replacement when gas-boiler are banned and water storage capacity where relevant.
- This application is proposing a gas boiler system for the retained building. All applications should demonstrate how they maximise on-site carbon emission reductions. It is strongly encouraged to replace the gas boiler strategy with a heat pump strategy instead to ensure the proposed dwelling is future-proofed and will not have any on-site fossil fuel combustion. It would enable this development to align with expectations in mitigating the climate emergency.
- Please provide some commentary on how the available roof space has been maximised to install solar PV. Have you considered using the rear roof for solar installation? Has your feasibility shown that other roofs will not be viable?
- How much of the roof area will be covered approximately and what is the assumed efficiency of the panels?
- How will the solar energy be used on site?
- A living roof should be installed under the solar PV, or if this is not feasible, the roof should be light coloured to reduce solar heat gains and the improve efficiency of the solar panels.
- Please identify on the plans where the air source heat pumps will be located.
- How much of the heating/hot water demand will be met by the proposed types of heat pumps? If this cannot be met fully, how will this be supplemented?

Energy – Be Seen

London Plan Policy SI2 requests all developments to ‘be seen’, to monitor, verify and report on energy performance. The GLA requires all major development proposals to report on their modelled and measured operational energy performance. This will improve transparency on energy usage on sites, reduce the performance gap between modelled and measured energy use, and provide the applicant, building managers and occupants clarity on the performance of the building, equipment and renewable energy technologies.

The applicant should install metering equipment on site, with sub-metering by dwelling unit. A public display of energy usage and generation should also be provided in the main entrance area to raise awareness of residents.

- Please confirm that sub-metering will be implemented for residential units.
- What are the unregulated emissions and proposed demand-side response to reducing energy: smart grids, smart meters, battery storage?
- Demonstrate that the planning stage energy performance data has been submitted to the GLA webform for this development: (<https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/be-seen-energy-monitoring-guidance/be-seen-planning-stage-webform>)

3. Carbon Offset Contribution

A carbon shortfall of 102.1 tCO₂/year remains. The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

An indicative offset contribution has been calculated; however, it is expected that further emissions are reduced for this development to be policy compliant.

4. Overheating

London Plan Policy SI4 requires developments to minimise adverse impacts on the urban heat island, reduce the potential for overheating and reduce reliance on air conditioning systems. Through careful design, layout, orientation, materials and incorporation of green infrastructure, designs must reduce overheating in line with the Cooling Hierarchy.

In accordance with the Energy Assessment Guidance, the applicant has undertaken a dynamic thermal modelling assessment in line with CIBSE TM59 with TM49 weather files. The report has modelled 5 habitable rooms, 4 homes/spaces and 0 corridors under the London Heathrow Weather files.

Due to the noise constraints of this site being adjacent to the Bruce Grove Road, the TM59 criteria for predominantly mechanically ventilated dwellings apply (assuming windows need to remain closed).

Results are listed in the table below.

	TM59 – criterion A (<3% hours of overheating)	TM59 – criterion B hours >26°C (pass <33 hours)	Number of habitable rooms pass TM59	Number of spaces pass TM52	Number of corridors pass
DSY1 2020s	9/9	5/5	5/5	4/4	0/0
DSY2 2020s	9/9	0/5	0/5	4/4	0/0
DSY3 2020s	8/9	05	0/5	3/4	0/0

All rooms pass including two marginal passes against the overheating requirements for 2020s DSY1.

Overheating mitigation strategy for new dwellings

- Glazing g-value of 0.4 (frame factor of 0.8)
- Energy efficient design of building services
- Concrete floor slab between dwellings in apartment blocks
- External shading provided by balcony overhangs with reveal depths of 250mm.
- Enhanced mechanical ventilation rates of 2ach.

Overheating mitigation strategy for refurbished dwellings:

- Internal blinds;
- Energy efficient lighting;
- Concrete floor slab between dwellings in apartment blocks;
- Openable windows (not allowed for parts of the dwelling adjacent to Bruce Grove including House Type 1 and Type 4 - Gatehouse);
- Dual aspect units allowing cross-ventilation;
- Trickle vents subjected to confirmation from heritage consultants.

The submitted overheating strategy is considered acceptable.

Overheating Actions:

- Redo the overheating modelling with the Central London weather file, which will more accurately represent the urban heat island effect. This was already requested at pre-application stage.
- Include floorplans showing which habitable spaces will be predominantly naturally ventilated or mechanically ventilated due to noise constraints, and specify MVHR and window opening areas.
- Specify the strategy to overcome any risk of crime and adverse air/noise pollution that will impact whether occupants can rely on natural ventilation, in line with the AVO Residential Design Guide. This should include specification of adapted windows and elevations demonstrating where these will be installed.
- Undertake further modelling:
 - o All single-aspect rooms facing west, east, and south;
 - o At least 50% of rooms on the top floor;
 - o 75% of all modelled rooms facing South or South/West;
 - o Rooms closest to Bruce Grove (noise and air pollution source), with windows closed at all times (with cross reference to the Noise and the Air Quality Assessments to demonstrate the most sensitive receptors and the [AVO Residential Design Guide](#));

- The applicant should also outline a strategy for residents to cope in extreme weather events, e.g. use of fans.
- Set out a retrofit plan for future and more extreme weather files, demonstrating how these measures can be installed, how they would reduce the overheating risk, what their lifecycle replacement will be, and who will be responsible for overheating risk.
- This development should have a heatwave plan / building user guide to mitigate overheating risk for occupants.

5. Sustainability

Policy DM21 of the Development Management Document requires developments to demonstrate sustainable design, layout and construction techniques. The sustainability report sets out the proposed measures to improve the sustainability of the scheme, including transport, health and wellbeing, materials and waste, water consumption, waste and recycling, flood risk and drainage, biodiversity, Inclusive access, climate resilience, energy and CO2 emissions and landscape design.

Actions:

- Include the number and location of safe and accessible cycle parking spaces for residents and visitors.
- Set a target (%) for responsible sourced, low-impact materials used during construction.
- Climate change mitigation should also be considered for the external spaces (shading, etc) and the impact of the increase in severity and frequency of weather events on the building structures.
- Suitability of proposed materials within the listed buildings should be negotiated, and applicants should carefully consider their hygrothermal properties.

Urban Greening / Biodiversity

All development sites must incorporate urban greening within their fundamental design and submit an Urban Greening Factor Statement, in line with London Plan Policy G5. London Plan Policy G6 and Local Plan Policy DM21 require proposals to manage impacts on biodiversity and aim to secure a biodiversity net gain. Additional greening should be provided through high-quality, durable measures that contribute to London's biodiversity and mitigate the urban heat island impact. This should include tree planting, shrubs, hedges, living roofs, and urban food growing. Specifically, living roofs and walls are encouraged in the London Plan. Amongst other benefits, these will increase biodiversity and reduce surface water runoff.

The development achieves an Urban Greening Factor of 0.4, which complies with the interim minimum target of 0.4 for predominantly residential developments in London Plan Policy G5.

Action:

- Please submit the Biodiversity Net Gain Calculation.

Living roofs

All development sites must incorporate urban greening within their fundamental design, in line with London Plan Policy G5.

The development is proposing living roofs in the development. All landscaping proposals and living roofs should stimulate a variety of planting species. Mat-based, sedum systems are discouraged as they retain less rainfall and deliver limited biodiversity advantages. The growing medium for extensive roofs must be 120-150mm deep, and at least 250mm deep for intensive roofs (these are often roof-level amenity spaces) to ensure most plant species can establish and thrive and can withstand periods of drought.

Living roofs are supported in principle, subject to detailed design. Details for living roofs will need to be submitted as part of a planning condition.